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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/554,140	10/20/2005	Gary Roy Chamberlain	089270-000100US	3188

20350 7590 04/23/2007

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EXAMINER	
VERBITSKY, GAIL KAPLAN	
ART UNIT	**PAPER NUMBER**
2859	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/554,140	CHAMBERLAIN ET AL.	
	Examiner	Art Unit	
	Gail Verbitsky	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/29/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-6, 9-13, 15, 17, 23, 27-31, 37-39, 45-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Wood et al. (U.S. 5675149) [hereinafter Wood].

Wood discloses in Fig. 2 a FPA device/ thermal camera/ thermal imager/ device comprising an array of detectors for generating thermal map. Wood teaches to calibrate the camera against a known target/ object of known emissivity and known (different) temperatures (located within of scene of view of the camera), thus, inherently, acting as a known heat source/ radiation source. Wood teaches a processor creating calibration constants/ correction based on the known temperatures of the heat source (known target) and applying these constants/ corrections to data (image) supplied by the camera. It is inherent, that the temperature of the heat source could be adjusted (higher/ lower) depending on the required temperature in the range of temperatures used for calibration. The camera is kept at ambient temperature (abstract).

Since the heat source is used at different known temperature, it, in a broad sense, could be considered as a plurality or first and second heat sources (first and second parts of the target/ object on the scene). There is a temperature sensor to measure temperatures of the heat sources. Since the heat source is of known emissivity and

known temperature it could be considered as a black body source. Since each heat source has its own known temperature, it is inherent that each heat source has each own set-point temperature known or communicated to the processor.

For claim 29: for the calibration purpose, since the heat source is replacing the actual object, it could be considered that the heat source is an object (at least part of the object).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wood in view of Wood (U.S. 5420419) [hereinafter Wood 2].

Wood discloses the device as stated above.

Wood does not explicitly teach that the device can comprise an array of bolometers.

Wood 2 teaches that the device can comprises an array of bolometers.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Wood, so as to replace the array of detectors with an array of bolometers, because both of them are alternate types of IR detectors which will perform the same function of

obtaining an IR image (map) of the object of interest if one is replaced with the other.

5. Claims 8, 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood in view of Knauth et al. (U.S.6610984) [hereinafter Knauth].

Wood discloses a device as stated above.

Although Wood suggests keeping the camera at ambient temperature, Wood does not explicitly teach the limitations of claims (Peltier principle) 8, 16-18.

Knauth discloses a FPA sensor array (microbolometer array) that is kept to an ambient temperature including a room temperature by Peltier's means.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device disclosed by Wood, so as to regulate the detectors temperature by using a Peltier means/ principle in order to thermostatically regulate the temperature and keep it at ambient as very well known in the art.

6. Claims 24-26, 32-36, 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wood in view of Walsall.

Wood discloses the device as stated above.

Wood does not explicitly teach the particular object of interest, i.e., human being, as claimed by applicant. Wood suggests no particular subject of interest. In a broad sense, it is considered that any object could be an object of interest for the camera of Wood.

Walsall discloses a device/ method comprising measuring temperature and making a thermal map of a human body located within a scene of an infrared imager

which first (at first stage) being calibrated against known reference temperature (heat radiation source). The operator obtains temperature of the skin of the forehead (set-point) or other parts of the body, which might inherently include hand, foot, face and compare with the skin of the breast. When the temperature of the breast is higher than the temperature of the forehead (threshold/ set-point), then the operator is notified (alarmed). It is also inherent that the bodies with increased temperature are identified by the operator/ nurse with respect to those with lower or normal temperature.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device, disclosed by Wood, so as to use it within such temperature ranges which is applicable to a human body and human parts, as taught by Walsall, because Walsall teaches that the thermal camera could be successfully used with a human.

7. Claims 1-3, 5, 13, 15, 20, 23, 27-31, 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheffer (U.S. 6072150) in view of Eryurek.

Sheffer discloses a device comprising a scene having a first heat radiation source of known temperature and emissivity and a second heat radiation source of a known temperature and emissivity (heated blackbodies) 84 and 86, using an infrared sensor 28 to detect a calibrated radiation intensity (temperature) at each calibration location (calibrated thermal map) within the scene. Sheffer also discloses a focal plane array camera (inherently cased in a protective housing) that can function as an IR sensor microprocessor.

Sheffer does not explicitly teach that the microprocessor is adapted to determine the calibration factor, as stated in claim 1, and the remaining limitations of claims 1-3, 5, 13, 15, 20, 23, 27-31, 39.

Eyurek discloses a device wherein a microprocessor is adapted to determine actual temperature based on a calibration factor stored in a memory as a result of calibration of a temperature sensor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the processor, so as to enable it to generate calibration factor and store it in the memory so as to be applied to a subsequent measurement, as very well known in the art, in order to provide a calibrated output signal and thus, achieve more accurate results of measurements.

8. Claims 1, 3-5, 11-12, 23-28, 39-43, 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walsall et al. (U.S. 4428382) [hereinafter Walsall] in view of Needham (U.S. 4466748).

Walsall discloses a device/ method comprising measuring temperature and making a thermal map of a human body located within a scene of an infrared imager which first (at first stage) being calibrated against known reference temperature (heat radiation source). The operator obtains temperature of the skin of the forehead (set-point) or other parts of the body that might inherently include hand, foot, face and compare with the skin of the breast. When the temperature of the breast is higher than the temperature of the forehead (threshold/ set-point), then the operator is notified (alarmed).

Walsall does not explicitly teach a microprocessor and the particular calibration process, as claimed by applicant.

Needham discloses a device comprising a protective cover covered with black 43 to form a blackbody heat radiation source/ reference. The device also comprising a microprocessor for comparison a target of interest temperature to the blackbody temperature and storing the difference in memory so as to use it a correction factor.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the processor, so as to enable it to generate calibration factor and store it in the memory so as to be applied to a subsequent measurement, as very well known in the art, in order to provide a calibrated output signal and thus, achieve more accurate results of measurements.

9. Claims 1-3, 5, 11-16, 19, 21, 23-25, 27-28, 39-41, 44-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seifert et al. (U.S. 6652452) [hereinafter Seifert] in view of Eryurek et al. (U.S. 5746511) [hereinafter Eryurek] and Pavlidis et al. (U.S. 7111980) [hereinafter Pavlidis].

Seifert discloses a device/ method in the field of applicant's endeavor wherein a stage of calibration/ adjusting comprising calibrating an uncooled IR/ thermal imager/ (focal) plane array with a calibration heater/ first radiation source 23 located within the scene of the thermal imager (Fig. 10). Seifert states that several heating elements for calibrating for different temperature can be used (col. 8, lines 1-9). Seifert discloses a microprocessor. The device is inherently positioned in a protective housing.

Seifert does not teach the particularly functioning microprocessor, as claimed by applicant in claim 1. Seifert does not teach that the heaters are of known emissivity.

Eryurek discloses a device/ method in the field of applicant's endeavor comprising a microprocessor having a memory for storing calibration factor and applying it to a subsequent temperature measurement. The calibration factor is determined based on reference temperature signal (known heat source).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the processor, so as to enable it to generate calibration factor and store it in the memory so as to be applied to a subsequent measurement, as very well known in the art, in order to provide a calibrated output signal and thus, achieve more accurate results of measurements.

Pavlidis discloses a device/ method in the field of applicant's endeavor wherein the heat radiation source is a blackbody of known temperature and known emissivity.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the heaters, so as to have blackbody radiators, as very well known in the art, because blackbody radiators of known temperature and emissivity and thus, are considered to be the perfect source of calibration.

10. Claims 1-3, 5-7, 9-12, 20, 23, 27-28, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes (GB10147690) in view of Eryurek.

Barnes discloses in Figs. 1-3 a device in the field of applicant's endeavor comprising a calibration reference source (first heat radiation source) 64 positioned in a scene/ field of view of a thermal imager/ IR camera/ thermograph along with a target 25.

The calibration reference is a blackbody radiator (known emissivity and known temperature) or plurality of blackbody radiators. A heater embedded in the blackbody radiator can be controlled/ adjusted by varying a resistor for different temperature ranges to correct the output signal of the thermal imager. Barnes teaches a circuit associated with the resistor. There is, inherently some processing device to regulate the predetermined/ set point temperature.

For claim 20: if a first blackbody is a first heat source and a second black body is a primary object in the scene, then both of them are considered to have substantially identical surface finish (black coating).

Barnes does not explicitly teach the particular processor as stated by applicant in claim 1, with the remaining limitations of claims 1-3, 5-7, 9-12, 20, 23, 27-28, 46.

Eryurek discloses a device/ method in the field of applicant's endeavor comprising a microprocessor having a memory for storing calibration factor and applying it to a subsequent temperature measurement. The calibration factor is determined based on reference temperature signal (known heat source).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the processor, so as to enable it to generate calibration factor and store it in the memory so as to be applied to a subsequent measurement, as very well known in the art, in order to provide a calibrated output signal and thus, achieve more accurate results of measurements.

11. Claims 1, 3-4, 21-22, 29, 31, 37-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes and Eryurek, as applied to claims1-3, 5-7, 9-12, 20, 23, 27-28, 46 above, and further in view of Maccarone (U.S. 6742925).

Barnes and Eryurek disclose the device/ method as stated above.

They do not teach that the heat source is at least a portion of an object forming the scene being mapped, as stated in claims 21-22 and the remaining limitations of claim 29 and 1, 3-4, 31, 37-38.

Maccarone discloses in Fig. 3 a device comprising a thermal imager 5, a heat radiation source (blackbody of known temperature and known emissivity) 1 within a scene (part of an object in the scene), a contact thermometer 2 within the scene attached to a mat 10 which is attached to a surface of the object of interest. The readings of thermometer 5 are then compared with the reading of the contact thermometer for the calibration purpose. It is very well known in the art that the difference is a correction data, which can be applied to further measurements. In a broad sense, it can be said that the contact temperature sensor is also sensing the temperature of the blackbody (first heat radiation source) since both of them are responding to the same temperature of the same object.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device, disclosed by Barnes and Eryurek, so as to have a heater/ radiation source in the vicinity of the object, so as to enable the operator to immediately calibrate the device by knowing the temperature on the scene.

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wood in view of Ludlow (U.S. 5265958).

Wood discloses the device as stated above.

Wood does not teach the limitations of claim 4.

Ludlow discloses a device in the field of applicant's endeavor comprising a plurality of heat radiation sources (blackbodies) with known temperature and emissivity in the scene of interest, a thermal imager. Each blackbody has a thermocouple (can act as a contact temperature sensor) for temperature control.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device, disclosed by Wood, so as to have a plurality of heaters/ radiation sources of known temperature, as taught by Ludlow, in order to enable the device to be calibrated at different temperature ranges, as very well known in the art.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in the PTO-892 and not mentioned above disclose related devices and methods.

Kraus et al. (U.S. 6065866) [hereinafter Kraus] discloses a method for calibrating a radiation thermometer by using a first heat/ radiation standard with a known temperature and a known emissivity (blackbody) a second heat source/ radiation standard having a second known temperature and a second known emissivity (blackbody) and determining the difference between the measured temperature of the blackbodies.

Ludlow (U.S. 5265958) discloses a device in the field of applicant's endeavor comprising a plurality of heat radiation sources (blackbodies) with known temperature and emissivity in the scene of interest, a thermal imager. Each blackbody has a thermocouple for temperature control.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gail Verbitsky whose telephone number is 571/ 272-2253. The examiner can normally be reached on 7:30 to 4:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on 571/ 272-2245. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GKV

Gail Verbitsky
Primary Patent Examiner, TC 2800

April 05, 2007